

stand up to repeated use in the laboratory. In the data on materials used to form gradients there appears to be no mention of self-generating gradients employing silica-coated polyvinylpyrrolidone, but this product may have been marketed too late for inclusion in the book.

These are minor deficiencies, however, and I warmly recommend the book to anyone concerned with the practicalities of preparing and characterizing plasma membranes. If you wish to find out what provides the basis for a particular technique of preparing plasma membranes, or of labelling them, or assaying marker enzymes, etc, the book will be most useful. Throughout the volume one can find information on how to use a particular method, how widely it is applicable, what its advantages and disadvantages are, and what special features require attention in the interpretation of data obtained. This approach has been adopted consistently in all 4 chapters that are, respectively,

concerned with techniques for rupturing cells and the assessment of their suitability and efficacy, general methods for the preparation of plasma membranes, the identification of subcellular fractions especially those containing plasma membranes, and the preparation of plasma membranes from specific tissues and cell lines. The book also contains innumerable practical hints, e.g., commercial detergents are often impure, and after prolonged storage the composition at the bottom of the container may differ from that on the top.

In a final section there are useful appendices on the properties of aqueous solutions of sucrose and Ficoll, tabulated information on centrifuge rotors used for the preparation of membranes, information on useful detergents, and the addresses of suppliers of materials and equipment.

J. A. Lucy

*Cytochalasins. Biochemical and Cell Biological Aspects*

Volume 46, Frontiers of Biology Series

Edited by S. W. Tanenbaum  
North-Holland; Amsterdam, New York, Oxford, 1978  
xvi + 564 pages. Dfl 218.00, \$95.00

Some 12 years have produced more than 500 papers about the effects of this small group of macrocyclic fungal products, whose name refers to their action as cell 'tranquillisers', a literal translation of the name being 'cell relaxers'. This stimulation of research by the discovery of a small group of compounds of rather strange and obscure origin must be one of the most intense that has yet taken place. The interest and controversy aroused by use of these compounds centres around the claims that they can be used to separate phenomena due to the action of fibrillar contractile structures in the cell, in particular those due to the action of actin type microfilaments, from phenomena due to other organelles. But this is still an area of controversy as the various articles in this book show

and there is at least some evidence that their prime site of action may be upon a cell surface receptor. As the possibility emerged that these compounds, in particular cytochalasin B, might be used in this manner everyone had to have a 'go' with the new magic substance and as a consequence a large, interesting, often controversial literature, occasionally of rather low quality, began to emerge.

It is indeed fortunate for the fame of the cytochalasins that their discovery co-incided with the introduction of methods for detecting contractile microfilament systems within the cell, such as better EM methods and the use of heavy meromyosin to detect actin because the two approaches were often used to complement each other.

The book represents a good survey of the whole field with most of the literature up to mid 1976 being under review. There is one curious and slightly redundant feature about the book. Nearly one-quarter of the text is occupied with a particularly excellent chapter by Godman and Miranda on the effects of these compounds on contractility: their chapter has the running title 'Visible effects of cytochalasin', but it is in fact a review of nearly the whole field of the biological effects of these molecules. Consequently there is much overlap and repetition between it and some 11 of the other 17 chapters.

The first 2 chapters deal with production and preparation (Tanenbaum) and the chemistry (Tamm) of these compounds. There are then 9 chapters which precede that by Godman and Miranda on various biological effects, i.e., on toxicity (Thilly *et al.*), on

morphogenetic processes (Spooner, Bluemink), on cell division and chromosomal abnormalities (Schroeder, O'Neill), on effects on exo- and endo-cytosis (Davies and Allison), on the use of these substances to enucleate cells (Poste and Lyon), on their effects on immune systems (Henney), and on their effects on plant and lower eukaryote cells (Thomas). Four of the final 5 chapters deal with the biochemistry of these compounds, dealing in particular with the important questions of the processes that may be affected by them (Weihing, Plagemann *et al.*, Lin and Tannenbaum). The use of these substances in studying virus-host cell interactions are discussed (Koch and Koch).

This book seems to be particularly well edited and free from error, but is poorly served by its indexer.

Adam Curtis

### *Essays in Neurochemistry and Neuropharmacology*

#### Volume 3

Edited by M. B. H. Youdim, W. Lovenberg, D. F. Sharman and J. R. Lagnado  
John Wiley; London, New York, Sydney, Toronto, 1977  
227 pages, £10.50; \$29.25

*Essays in Neurochemistry and Neuropharmacology* have already proved to be a successful series dealing with up-to-date specific problems arising in the field. They are intended for advanced undergraduate students and research workers, preferably with some knowledge of neurobiology. The main theme of volume 3 is on the role of monoaminergic neurotransmitters. This subject has grown enormously following the discovery of sensitive histochemical methods for demonstrating different monoaminergic pathways and of selective lesioning techniques. These procedures have established the complex pattern of interaction between different transmitter-containing neural networks. As, for example, shown in the fifth essay by Lloyd, nigro-striatal dopaminergic fibres inhibit striatal cholinergic neurons and cortical acetylcholine activity is stimulated by meso-limbic dopamine containing pathways,

but in addition GABA and 5HT projections are probably involved. There is evidence that such systems are probably regulated by feedback central mechanisms, and here the technique of single cell recording has been especially valuable (chapter 1). Unravelling details of the different pathways is exceedingly difficult so that use of readily available model preparations is most attractive. There is for example the intriguing possibility that blood platelets in some respects mimic aminergic neurons. In his essay Pletscher shows that platelets serve as a particularly useful model of neuronal 5HT metabolism and help simplify comparable studies on CNS transmitters uptake, release and storage mechanisms.

Dietary tryptophan can modify brain 5HT synthesis and thus alter function. This has been a controversial subject particularly in relation to the effect of